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ical of all processes. Yet, like all preconceptions, such a belief has the effect to blind the best minds to the plainest truths.

Colonel MALLERY mentioned the coincidence that, in a discussion on a trip to Fortress Monroe in the spring of 1881, between Major Powell, President of the Society, Rev. Clay MacCauley, one of its members, and himself, he expressed the result of civilization to be the successful struggle against the law of the survival of the fittest, which view, on returning to Washington, he found presented in nearly the same words by one of the writers quoted by Dr. Welling and published in an English periodical then just received.

FIFTY-NINTH REGULAR MEETING, November 21, 1882.

Colonel GARRICK MALLERY, Vice-President, in the Chair.

The Chair announced that the committee, appointed to confer with similar committees of the Philosophical and Biological Societies relative to the proposed federation of the three societies, had reported to the Council that at the last meeting of the Joint Committee a resolution was adopted declaring that it had been impossible to report any plan that would be acceptable to the three societies, and that the Joint Committee had adjourned *sine die*.

The election of Messrs. John Greene Mills, and John Savary, as active members of the Society, and of Dr. Harrison Wright, as corresponding member, was announced.

The Curator announced that he had received on behalf of the Society the following documents:

From the AUTHOR.—A biographical sketch of Capt. Oliver Brown, an officer of the revolutionary army, who commanded the party which destroyed the statue of *George the Third* in New York city, July 9, 1776. By Rev. Horace Edwin Hayden. Privately printed. Wilkes-Barre, Pa., 1882, 8vo., 22 pp.

From the SOCIETY.—Un agent politique de Charles-Quint, Le bourguignon Claude Bouton, Seigneur de Corberon. * * Par M. E. Beauvois. * * Publication de la Soc. d'Hist. de Beaune, Paris. 1882, 12mo., 229 pp.

From the INSTITUTE.—Third Ann. Rep. Archæological Inst. of America, at Boston. 1882, 56 pp., 8vo.

From the LIBRARY COMPANY.—Bulletin Library Co. of Phila., July, New Series, No. 9, 8vo., pp. 76.

From ISAAC ST. GOAR.—Antiquarischer Katalog, No. 53. Frankfurt-am-Main. 1882.

From Dr. OSCAR LÖW.—Correspondenz-Blatt der deutschen Gesellschaft für Anth., Eth. u. Urg. July, 1882.

From the PUBLISHER.—The National Scientific Journal, Chicago. Vol. 2, Numbers 1–8, 10.

DISCUSSION.

The discussion of the address of Vice-President Welling was continued from the last meeting.

Dr. WELLING stated that he regarded social processes as constituting a modified form of natural selection; that the results brought about by social agencies are due to the interaction of a variety of different influences, no one of which could alone accomplish them; that it is out of this conflicting mass of social activities and interests that the good effects come which we call social progress. He said it was on this view that he explained the common saying that every people has the government it deserves. However low a race may be, the influences, internal and external, acting upon it will necessarily give it the form of government which it is capable of maintaining and which it requires for its own protection. He stated that it was some such train of thought as this that he had intended to follow out in concluding his address, which was accidently interrupted, and that he would take occasion to complete it before publication.

Dr. W. J. HOFFMAN made some remarks on "THE CARSON FOOTPRINTS," which he illustrated with plaster casts of the originals and with drawings.

THE CARSON FOOTPRINTS.

Having occasion to visit the western part of Nevada, a short time since, for the purpose of prosecuting ethnologic investigation among the Washoe Indians living in the immediate vicinity of Carson, my attention was called to the recently discovered footprints in the State prison quarry. Before describing these, it may be well, however, to refer to their geologic position.

One and a half miles east of Carson, in the southeastern portion of Eagle valley, is situated a low sandstone hillock, forming the northern extremity of a low range of hills which project from the Pine Nut Mountains in the south. Upon the northern slope of this hillock is situated the prison, approximately in latitude 39° 9′ north and longitude 119° 44′ west, at an altitude of nearly 5,000 feet above sea level. The prison yard is formed by the natural floor of sandstone, which has been exposed by quarrying, leaving a natural vertical wall around three sides of the square, varying from fifteen feet in height on the eastern side to thirty-two feet on the western. One reason of this difference in altitude is accounted for from the fact of the dip of the ledge toward the west.

When the quarry was first opened at the original site, a short distance west of the present excavation, large numbers of mammalian bones were unearthed and carried away by people who chanced to visit the locality out of curiosity. During the past summer, however, the attention of the warden was directed to curious depressions upon various portions of the floor of the prison yard, which, upon inspection, appeared to resemble the footprints of a "gigantic human being" so greatly that greater care was exercised in the removal of stone, so as to preserve as carefully as possible any new exposures for the purpose of investigation.

This portion of Nevada was, at a not remote period of geologic time, covered by a system of lakes, and these are generally believed to have been contemporaneous with the glacial period of the Sierra Nevada, and, therefore, of the Quaternary age. If we exclude the consideration of palæontological evidence, this particular formation appears to be Tertiary, which supposition is in harmony with the suggestions of Professors Cope and Marsh, who refer the mammalian remains to the Upper Pliocene.

The formation consists of several strata of fine grayish compact sandstone, one above the other, each having a thickness of from two to five feet, between which are seams of arenaceous shale and clay. In various localities in the compact strata are the remains of branches and roots, some of which are readily removed from the cavities containing them, the branches especially having decreased in caliber before silicification had taken place.

Between the strata, near the upper surface of the formation, bones of various kinds have been discovered almost daily, which were found to be those of deer (*Cervus*), tusks and teeth of the elephant, probably *Elephas primigenius*, and teeth, in excellent preservation, of *Equus major*. The fresh-water shells discovered have been pronounced to be those of the *Anodonta*, and one gasteropod was also noticed, evidently *Physa*.

At the time of my visit the prison floor contained an area of about one and a half acres, and was almost rectangular in form. Upon this floor were the impressions of the hoofs of the horse, deer, and a wading bird of the order of *Grallatores*, numerous tracks of the wolf, possibly *Canis occidentalis*, and of the elephant. The most interesting impressions, over one hundred in number, were distributed over the eastern, southern, and southwestern portions of the yard, and very strikingly simulated those made by a human being upon soft soil.

The entire number of tracks were divisible into six series, and presented impressions of at least two individuals, one being much younger or smaller than the other. The tracks appear to have been made in a layer of sediment of several inches in depth, which covered the harder sandstone immediately below. In each instance there is a ridge all around the indentation, made by the pressure of the foot, varying from one to two and one-half inches in height. This ridge appears to be only partially solidified mud, and is still flaky, and easily broken in recently uncovered impressions.

In the southeastern corner of the yard are a number of confused tracks of the same species, which had been made in deeper mud, the impressions of some exceeding six inches in depth, the heel, in several instances, being deeper than the anterior portion of the foot, as if the individual had struggled or attempted to drag a burden.

All of the footprints are clearly rights and lefts, and deviate from the median line at an angle corresponding to those made by a man. The foot-marks measure nineteen inches in length, about six inches across the broadest part of the heel, and seven inches at the base of the toes. The hollow under the instep is remarkably prominent and characteristic of the human foot, as is also the curvature around the front of the toes. In other words, the impression appears exactly like that made by an Indian's moccasin if pressed upon a layer of thick mud.

No separate indications of toes are visible, and in many of the tracks there is a shallow ridge extending around the edge of the sole as if the foot had been encased in a sandal. In several of the tracks the rounded depressions of the heel, and the ball of the great toe are also visible. The presence of the well defined line corresponding to the cut edge of a piece of hide as a sole gave rise to numerous speculations with reference to the question of Tertiary man.

The immense size of the tracks is the first objection to any theory to be entertained with respect to man. To meet this objection, an individual was found on the Pacific coast—a Sonoran, if I mistake not—the sole of whose shoe measured eighteen and one-half inches in length, just half an inch less than the largest fossil footprints. Tracings of this foot were exhibited by scientific gentlemen in San Francisco, and I am compelled to admit, that in general outline the proportions corresponded closely to those at Carson.

Another objection relates to the length of stride, straddle, etc. With respect to the former, the distance from heel to heel of the same side averages about four feet and four inches, varying in the regular series of strides from a minimum of three feet ten inches to a maximum of four feet ten inches.

With respect to the straddle, or distance between rights and lefts, there is a variation of from almost nothing to sixteen inches.

I found upon the inner surface of several of the posterior ridges, at places corresponding to the back of the heel, fine lines or grooves intersecting one another irregularly, which presented every appearance of having been produced by bristles upon the animal's foot. These creases had not been artificially produced by cleaning the dirt from the footprints, and they were present in several distinct localities.

No remains of human beings have been found, neither are there any traces of worked implements or weapons, or anything of whatever character which might bear the slightest evidence of human workmanship. The footprints are perfectly flat and squarely set upon the rock; even is this the case where the tracks are deepest and where they were apparently not forced deep enough to strike the substratum of harder formation, as is apparently in all the other impressions. In localities which would have favored the slightest indication of claws no such indications are visible. The layer of mud was of that consistence to receive sharp impressions and to retain them, as is shown in the bird tracks upon which the delicate ridges remain perfect, corresponding to the creases under the claws. The wolf tracks, as well as those of the elephant, also plainly record the form of the ball of the foot and the toes.

That these impressions were made by an Edentate is almost beyond doubt. A peculiarity in walking, which consists in throwing the weight upon the outer edge of the sole of the foot, survives in the living species of sloths, and it is more than probable that the same was characteristic of the ancient representatives of the genus. A foot of the size indicated by these impressions, would naturally sink to a considerable distance in soft soil, but if arrested by coming in contact with a hard sub-stratum would naturally flatten out the sole, and cause a flat surface upon that sub-stratum. In raising the foot plastic material, such as the present formation appears to have been, would ordinarily adhere to the sole, as many indications of this are visible. The edge around the sides of the foot marking the beginning of the coat of bristles or hair, would also become matted with mud and show a depressed crease, and may perhaps be shown in what was considered the edge of the sole of a sandal. The bristle marks indicated in parts of the inner rim of the footprint would warrant this suggestion. Considering the peculiarity of walking upon the outer portion of the sole of the foot, a rounded elevation would naturally be produced as if there existed a high instep. This elevation is very pronounced in every impression, and clearly points out the characteristic impression of the sloth.

Thus far no remains of any of the *Edentata* have been discovered though it is probable that such will be unearthed.

The casts which I prepared at Carson were taken from the most typical impressions by employing plaster of Paris. The tracks were carefully oiled and a very thin solution of plaster poured over them embracing the ridges, the whole being guarded by first erecting ridges of sand to prevent the plaster from running beyond the proper limits. Casts were also made showing the presence of bristles on the back of the heels, though these were not so satisfactory. More desirable materials for this work could not be obtained at Carson.

Considerable discussion followed, which was participated in by Messrs. Bigelow, Mason, King, Gilbert, Gatschet, and Hoffman.

Prof. OTIS T. MASON read a paper entitled "ANTHROPOLOGY AT THE AMERICAN ASSOCIATION."*

The discussion of this paper was confined to Prof. Mason's scheme of terminology, and was participated in by Dr. Fletcher, Messrs. Gatschet and Ward and Prof. Mason.

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* Smithsonian An. Rep., 1881, and Naturalist, Sept., 1882.

SIXTIETH REGULAR MEETING, December 5th, 1882.

Dr. ROBERT FLETCHER, Vice-President, in the Chair.

Mr. J. D. McGUIRE, of Ellicott city, read a paper on "SOAPSTONE QUARRIES AND ABORIGINAL TOOLS FOR WORKING SOAPSTONE."

The speaker alluded to Paul Schumacher and others who have written upon the subject, correcting some of their errors, especially those that intimate the use of metal. Mr. McGuire has found in the quarries the very implements of stone with which the mineral was worked. A résumé of the principal quarries known was given, with the observation that we know more of the lake-dwellings of Switzerland than of interesting relics lying at our very doors. No perfect vessels have ever been discovered. The process of detaching and finishing the vessels consisted of several distinct steps: 1. Pecking a solid block from the quarry; 2. Shaping the outside by bold chopping; 3. Excavation by pecking. The tools are rude, but eminently adapted to their work. The pits are not deep, and are now filled with the debris of centuries. The vessels vary greatly in size, outline, thickness, handles, &c. The tools are of black granite, and seldom of quartz, which latter Mr. McGuire thinks unfit for the purpose. The tools are picks, mauls, axes, adzes, and celts.

The discussion was participated in by Messrs. Hoffman, Reynolds, and Mason.

Prof. CYRUS THOMAS presented a communication on "MOUND EXPLORATIONS IN SOUTHERN ILLINOIS."

He referred to an enclosure and mounds in Union county, in the southern part of Illinois, on the Mississippi river. Prof. Thomas examined one of the mounds and found it to contain layers of burned clay and sand, and in the centre large masses of charcoal. Further researches were made in Alexander county in an *atelier*, or place for the working of flint. Quarries are in the neighborhood, and an interesting group of slab graves in a mound, arranged in